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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/551,599	09/30/2005	Moshe Ben-Ayun	CM05280EI	2917

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MOTOROLA, INC.
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SCHAUMBURG, IL 60196

EXAMINER

FUTEL, GAYLA S

ART UNIT	PAPER NUMBER
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2609

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/20/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/20/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing.Schaumburg@motorola.com
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Office Action Summary

Application No.

10/551,599

Applicant(s)

BEN-AYUN ET AL.

Examiner

Gayla Futel

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/30/2005
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **311, 320** of Figure 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 6-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Lagerblom et al. (US Patent No. 6639950).
4. Regarding Claims 1 and 9, Lagerblom et al. anticipates a wireless communication unit comprising a linearized transmitter (**Fig. 1**) having: a forward path for routing a signal to be transmitted (**Fig. 1, #20, 21, 10, 13**); a power amplifier (**Fig. 1, #13**) for transmitting a linearized radio signal; a feedback loop, operably coupled to the power amplifier and the forward path, comprising a loop adjustment function (**Fig. 1, #15, 16, 17**), wherein the forward path and feedback loop comprise quadrature circuits (**Col. 3, lines 65-67**); and a processor for applying a first training signal (**Fig. 1, I_In**) to a first quadrature circuit loop routing through the forward path, power amplifier and feedback path to determine at least one first parameter setting (**Fig. 1, I_Up**) of the loop adjustment function (**Fig. 1, #15, 16, 17**), wherein said processor applies a second training signal (**Fig. 1, Q_In**) to a second quadrature circuit loop to determine at least one second parameter setting (**Fig. 1, Q_Up**) of the loop adjustment function (**Fig. 1, #15, 16, 17**). Though Lagerblom et al. does not explicitly teach the processor, it is inherent that the base band I and Q signals contain data and can be produced from a signal processor.
5. Regarding Claim 2, Lagerblom et al. anticipates the wireless communication until of claim 1 as stated above. Lagerblom et al. further anticipates that the first training signal and the second training signal have substantially the same signal parameters (**Col. 4, lines 3-5**).

6. Regarding Claim 3, Lagerblom et al. anticipates the wireless communication unit of claim 2 as stated above. Lagerblom et al. further anticipates the loop adjustment function is a phase shifter (**Fig. 1, #17**) for adjusting a phase shift in the first and second quadrature circuit loops (**Col. 4, lines 37-40**).
7. Regarding Claim 4, Lagerblom et al. anticipates the wireless communication unit of claim 3 as stated above. Lagerblom et al. further anticipates a phase calculation function (**Fig. 1, #15**) operably coupled to the phase shifter (**Fig. 1, #17**) to calculate a phase shift in each of the first and second quadrature circuit loops, thereby ascertaining an imbalance there between (**Col. 4, line 66-Col. 5, line 3**).
8. Regarding Claim 6, Lagerblom et al. anticipates the wireless communication unit of claim 1 as stated above. Lagerblom et al. further anticipates that the linearized transmitter is a Cartesian feedback linearized transmitter such that adjustment is applied to a real-time feedback loop. Lagerblom et al. describes the known process of linearizing a non-linear radio frequency power amplifier using Cartesian feedback (**Col. 1, lines 30-42**). It is inherent that a transmitter that uses the same process can be called a Cartesian feedback transmitter. Lagerblom et al. also discloses that the loop adjustment can be implemented several different ways (**Col. 7, lines 59-64**) which can include repeating the adjustment at given intervals. It is inherent that the adjustment can be applied to a real-time feedback loop.
9. Regarding Claim 7, Lagerblom et al. anticipates the wireless communication unit of claim 1 as stated above. Lagerblom et al. further anticipates the wireless

communication unit is capable of operation on a TETRA communication system (**Col. 8, lines 6-7**).

10. Regarding Claim 8, Lagerblom et al. anticipates the wireless communication unit of claim 1 as stated above. Lagerblom et al. further anticipates that the wireless communication unit is a subscriber unit or a base transceiver station (**Col. 1, lines 13-16**). Lagerblom et al. teaches that after the signal is amplified by the RF amplifier, the signal is sent to an antenna to be transmitted (**Col. 4, lines 21-22**). Since a transmitter is half of a transceiver, it is inherent that the wireless communication unit anticipated by Lagerblom et al. could be used in a base transceiver station.

11. Regarding Claim 10, Lagerblom et al. anticipates the method of training a linearized transmitter having a forward path (**Fig. 1, #20, 21, 10, 13**), a power amplifier (**Fig. 1, #13**) and a feedback loop comprising a loop adjustment function (**Fig. 1, #15, 16, 17**), wherein the forward path and feedback loop comprising a loop adjustment function, wherein the forward path and feedback loop comprise quadrature circuits; the method comprising the steps of: applying a first training signal (**Fig. 1, I_In**) to be routed through a first quadrature circuit loop of the forward path, power amplifier and feedback path; and determining at least one first parameter setting (**Fig. 1, I_Up**) for the loop adjustment function (**Fig. 1, #15, 16, 17**) based on the first training signal, applying a second training signal (**Fig. 1, Q_In**) to a second quadrature circuit loop of the forward path, power amplifier and feedback path; and determining at least second parameter setting (**Fig. 1, Q_Up**) for the loop adjustment function (**Fig. 1, #15, 16, 17**) based on the second training signal.

12. Regarding Claim 11, Lagerblom et al. anticipates the method of training a linearized transmitter of claim 10 as stated above. Lagerblom et al. further anticipates the method further comprising adjusting the loop adjustment function based on a determination made on the first training signal and a determination made on the second training signal (**Col. 4, line 66-Col. 5, line 3**).

13. Regarding Claim 12, Lagerblom et al. anticipates the method of training a linearized transmitter as described in claim 10 as stated above. Though Lagerblom et al. does not explicitly stated that the steps are performed in a storage medium storing processor, it is inherent that a processor can perform the method of training. The method of training the transmitter requires that training signals be applied to a circuit and determination of parameter settings for the loop adjustment circuit. A processor can provide the training signals for the first and second quadrature circuit loop and provide parameter settings for a loop adjustment circuit. A processor that can store medium would be inherent because it would allow for better adjustments in the loop adjustment circuit.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lagerblom et al. (US Patent No. 6639950) as applied to claim 1 above, and further in view of Rayne (UK Patent Application GB 2348062A). Lagerblom et al. anticipates the wireless communication unit of claim 1 as stated above. However, Lagerblom et al. does not teach that the processor applies a first training signal to the linearized transmitter prior to applying a second training signal. Rayne teaches a method of transmitting different training signals spaced at regular intervals to a Cartesian loop RF amplifier (Page. 15, lines 15-21). It would have been obvious to one of ordinary skill in the art to send the first training signal prior to sending the second training signal because it would make the loop adjustment circuit perform the linearization of the amplifier quicker.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Huang et al. (US Patent No. 5,574,994)
- McCabe et al. (US Patent No. 5,913,172)
- Wilkinson et al. (US Patent No. 6,381,286)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gayla Futel whose telephone number is 571-270-3008.

The examiner can normally be reached on Mon-Thur 7:00 am - 5 pm.

Art Unit: 2609

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GF


RICKY Q. NGO
SUPERVISORY PATENT EXAMINER